Location Selection Models for Industrial Estates (Decision Making System) An Omani Context

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Abstract

This project studied the problem of how to choose proper locations for industrial estates. Despite the widespread of these estates in the GCC including Oman, no scientific study has been conducted to understand what factors need to be considered when establishing and locating new industrial estates. The project doesn't provide a generic model to be implemented when considering this problem, instead, it presents the different approaches tried in previous studies and information gathered in Oman to assist researchers interested in this subject. The project objective was, to find a suitable decision making system that will help in the location selection process of industrial estates in Oman. In doing so two approaches were tried first that failed to capture the problem as introduced by decision makers in Oman. The two approaches adopted are location/allocation models that are usually used in supply chain management to locate facilities, and Cost-Benefit analysis models that are mainly used in evaluating public projects. The adoption of these models failed in capturing the problem studied. While objectives considered in these models are quantifiable, the failure of both approaches was due to the nature of objectives sought in industrial estates location selection process, where these objectives are attributive rather than numerical. Although, the reporting of failing attempts is not quite common in literature, these results are believed to be quite valuable for future work in this field. The problem under study had multi-objective where some of these objectives considered issues like environment, social development among others. Due to this nature of the objective, a decision support system was developed that allows the decision makers to specify the importance of each objective thread considered. The system integrated a database of the locations considered and uses a Visual Basic program with a user friendly interface. This project showed that, industrial estate in Oman are considered to be public projects with unique qualitative attributes. This renders the process of location selection using standard quantitative tools such as location allocation and cost-benefit analysis models ineffective. Therefore, knowledge-Based Decision Support System was found to be more appropriate in Oman context when considering this kind of decision making